Energy Audits
EnergyWise Incentives
Electric Vehicles

The Energy Audit

The energy audit will include:

- Visual observation of the building's key elements, including:
  - Construction details of the building envelope (e.g., walls, roof, windows, and doors)
  - An inventory of the heating and cooling systems (HVAC) and control methods
  - Interior and exterior lighting systems and related controls
  - Hot water systems
- Discussion of building occupancies and operating schedule
- An assessment of energy bills
- Identification of no-cost and low-cost energy saving opportunities, potential improvements, and EnergyWise incentives available.

ENERGYWISE℠
Use less. Spend less. Do more.

Residential

- High-Efficiency Heat Pumps
  - Incentive or Loan
- Cooling System Tune-Up
- Attic Insulation
- Heat Pump Water Heaters
- Smart Thermostat

Agricultural

- Lighting
- Irrigation
- Heat Mats

Commercial/ Industrial

- Lighting
- Variable Frequency Drives (VFDs)
- Heating, Ventilating, & Air-Conditioning (HVAC)
- HVAC System Optimization
- Industrial Process

Commercial / Industrial Lighting

Lighting Equipment		LED Wattage	2020
Linear Fluorescent (Replaces fluorescent)	NEW LED Fixture	9 - 22 watts LED	$5
		23 - 45 watts LED	$10
		46 - 68 watts LED	$15
		69 watts or greater LED	$20
	Retrofit Lamp, Tube, Panel or Kit	9 - 22 watts LED	$2
		23 - 45 watts LED	$4
		46 - 68 watts LED	$6
		69 watts or greater LED	$8
High Bay, Exterior Dusk-to Dawn Replaces: • Mercury Vapor • Metal Halide • High Pressure Sodium • Incandescent (300 watts or greater)	NEW LED Fixture	9 - 65 watts	$20
		66 - 130 watts	$40
		131 - 240 watts	$60
		241 watts and greater	$80
	Retrofit Lamp or Kit	9 - 65 watts	$8
		66 - 130 watts	$16
		131 - 240 watts	$24
		241 watts and greater	$32
LED Exit Signs	Does not require DLC listing	Under 8 watts	$10
Fluorescent freezer/refrigerator case lighting		5' or 6' LED	$20
Uncensored control		Occupancy sensor	$15

Contact your local electric utility to see if your project may qualify for the EnergyWise℠ Custom Lighting Program.

Variable Frequency Drives (VFD)

- $30/hp incentive, for motors from 1 to 200 horsepower.
- Minimum of 2000 hours annual operation.
- The centrifugal fan or pump controlled must have significant load diversity that will result in savings through motor speed variation.
- VFD speed must be automatically controlled.
- New construction HVAC pumps and fans are ineligible.
- Replacement of existing VFDs or for single phase service is ineligible.
- It is highly recommended to install protective equipment to maintain VFD reliability.

Commercial HVAC

Equipment Type	Size (tons)	Minimum Cooling Efficiency	Minimum Heating Efficiency	Incentive
Air Conditioner	< 20	15 SEER or 14 IEER	n/a	$15/ton
Air Conditioner - Variable Capacity	< 20	Inverter Driven	Inverter Driven	$30/ton
Air Source Heat Pump (HP)	< 20	14 SEER or 12.2 IEER	8.5 HSPF or 3.3 COP	$40/ton
Air Source Heat Pump (HP)	< 20	15 SEER or 14 IEER	8.5 HSPF or 3.3 COP	$80/ton
Air Source HP - Variable Capacity	< 20	Inverter Driven	Inverter Driven	$100/ton
Water Source HP	Any	Any EER	Any EER	$100/ton
Geothermal HP	Any	Any EER	Any EER	$220/ton

Questions about Energy Audits or EnergyWise Incentives?

Electric Vehicles (EVs)

What's the Big Deal?

Easter morning 1900:
5th Avenue, New York City.

Spot the automobile??

Source: US National Archives

What's the Big Deal?

Easter morning 1913:
5th Avenue, New York City.

Spot the horse??

Source:
George Grantham Bain Collection

What's the Big Deal?

- High EV growth expected
- It is in the best interest of building owners to plan for the future
  - Higher costs and potential physical limitations at the site if no provisions are made for the installation of charging stations
  - Major infrastructure ramifications
- Plan/design for EVs now!

Types of EVs

Hybrid Electric

- ICE engine with electric motor assist
- Don't plug-in
- Regenerative breaking recharging
- Boosts fuel economy; battery powered at low speeds
- Toyota Prius, Honda Insight, Toyota Highlander Hybrid

Plug-in Hybrid

- Electric motor in series or parallel with ICE
- Plug-in
- ICE and regenerative braking recharging
- 4 to 20 kWh battery capacity
- Battery range of 20-60 miles
- Chevy Volt, Ford Fusion Energi, Kia Optima, Toyota Prius Prime

Battery Electric

- Electric motor only
- Plug-in
- Regenerative braking recharging
- 20-100 kWh battery
- Battery ranges of 80-250+ miles
- Nissan Leaf, Chevy Bolt, Tesla, BMW I3

Benefits of Driving Electric

Save money
"Plug in" and spend far less than you do at the gas pump

Fact:
Driving elect c an 70% on fuel costs.

Clear the air
Say goodbye to tailpipe emissions

Fact:
Driv lping to preserve the
en

Support energy independence
Fuel your car with American-made energy

F rces helping to reduce the
de

Enjoy the ride!
Feel the excitement of quick, quiet and smooth acceleration

Fact:
Electric veh cle ne te to ave higher satisfaction levels with their cars compared to non-electric vehicle owners.

Fewer trips to the gas station!

Driving electric is a win-win for utilities and their customers.

Fuel Cost Comparison

GAS VEHICLE	ELECTRIC VEHICLE
10,000 miles per year	10,000 miles per year
25 mpg = 400 gallons of gas @ $2.00	3.6 miles/kWh = 2,777 kWh @ $.12/kWh
$800 per year	$333 per year

58% Savings

Another Benefit – Reduced Maintenance

Drive train of ICE (internal combustion engine) vehicle:

~ 2,000 moving parts.

Transmission, driveshaft, clutch, valves, differentials, pistons, gears, crankshafts…

EV drive train:

< 20 moving parts!

Benefits to Building Owners

Fleets

- Lower cost of transportation
  - Reduce operating expenses with lower fueling and maintenance costs
  - Proactively manage expenses

Workplaces

- Attract and retain talent
  - Increase employee satisfaction
  - Improve productivity

Benefits to Building Owners

Multi-family Homes/Commercial Property

- Attract and retain residents and tenants
  - Increase average rent and property value
  - Provide a valued amenity

Retail and Hospitality

- Increase sales
  - Attract new and repeating customers
  - Increase shopping time
  - Boost customer satisfaction

ACHIEVE SUSTAINABILITY GOALS

Home Chargers

Level 1

120 Volt –
50 hrs for a full
charge (Bolt)

Level 2

240 Volt –
8 hrs for full
charge (Bolt)

- Charging Station cost $700
- Home Wiring cost $200 - $1,000

Public Charging Equipment

Level 2 Chargers

DC Fast Chargers

Charger Characteristics

LEVEL 2 240 VOLT OUTLET

- Faster charging for longer drives
- Provides a full charge for most EVs in:

100% Electric

4-8 hours
empty to full charge

Electric & Gas

1-2 hours
empty to full charge

25 miles
per hour of charging

DC FAST CHARGE

- Much faster charging at public locations
- 3 different connectors depending on vehicle:

CCS Combo
65 miles
in 20 minutes

CHAdeMO
67 miles
in 30 minutes

Tesla Supercharger
130+ miles
in 20 minutes

0 to 80%
30-40 minutes

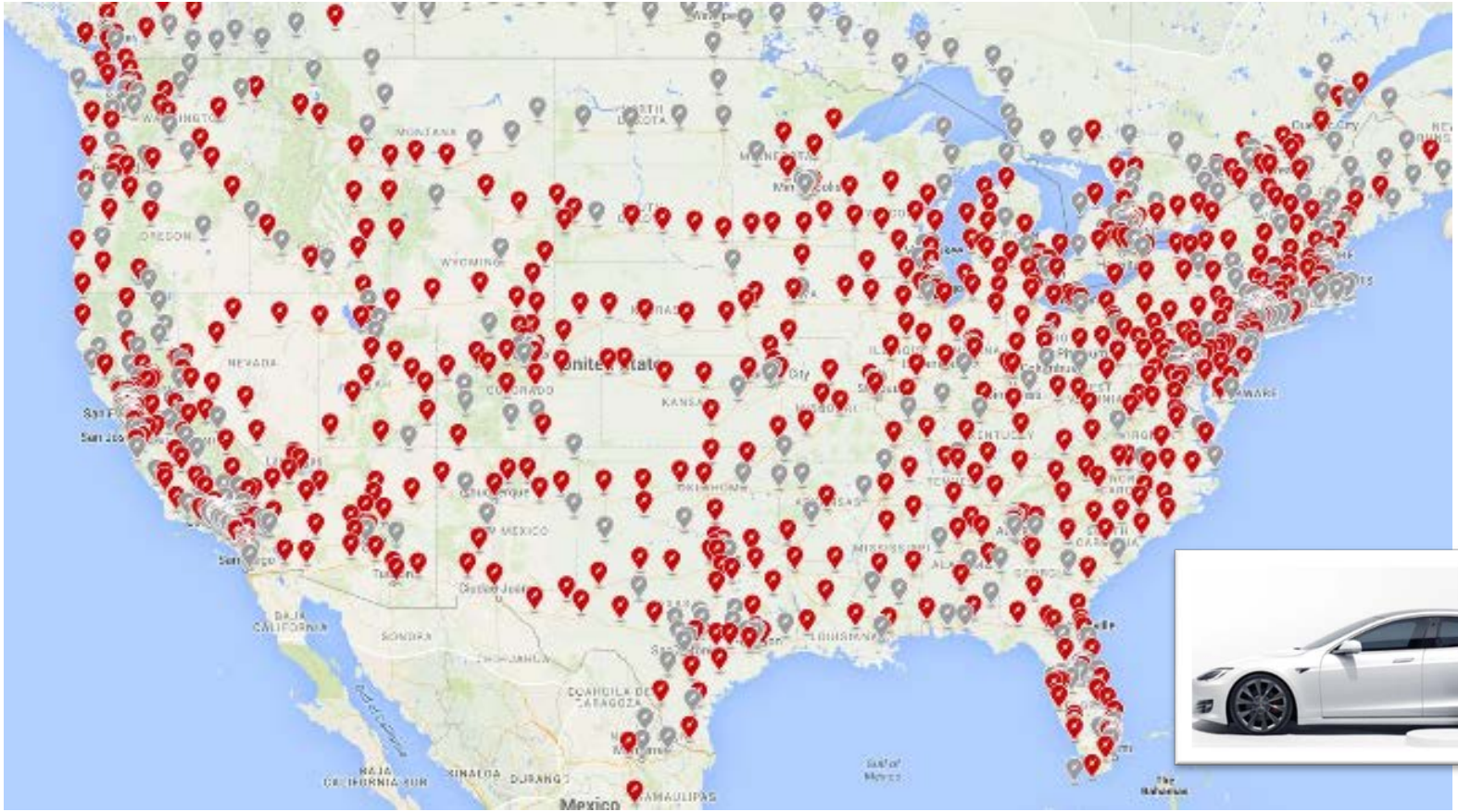
Nebraska Public Level 2 Charging Locations

Tesla

J1772 Connector

Map from ChargeHub

Tesla DC Fast Charging Network

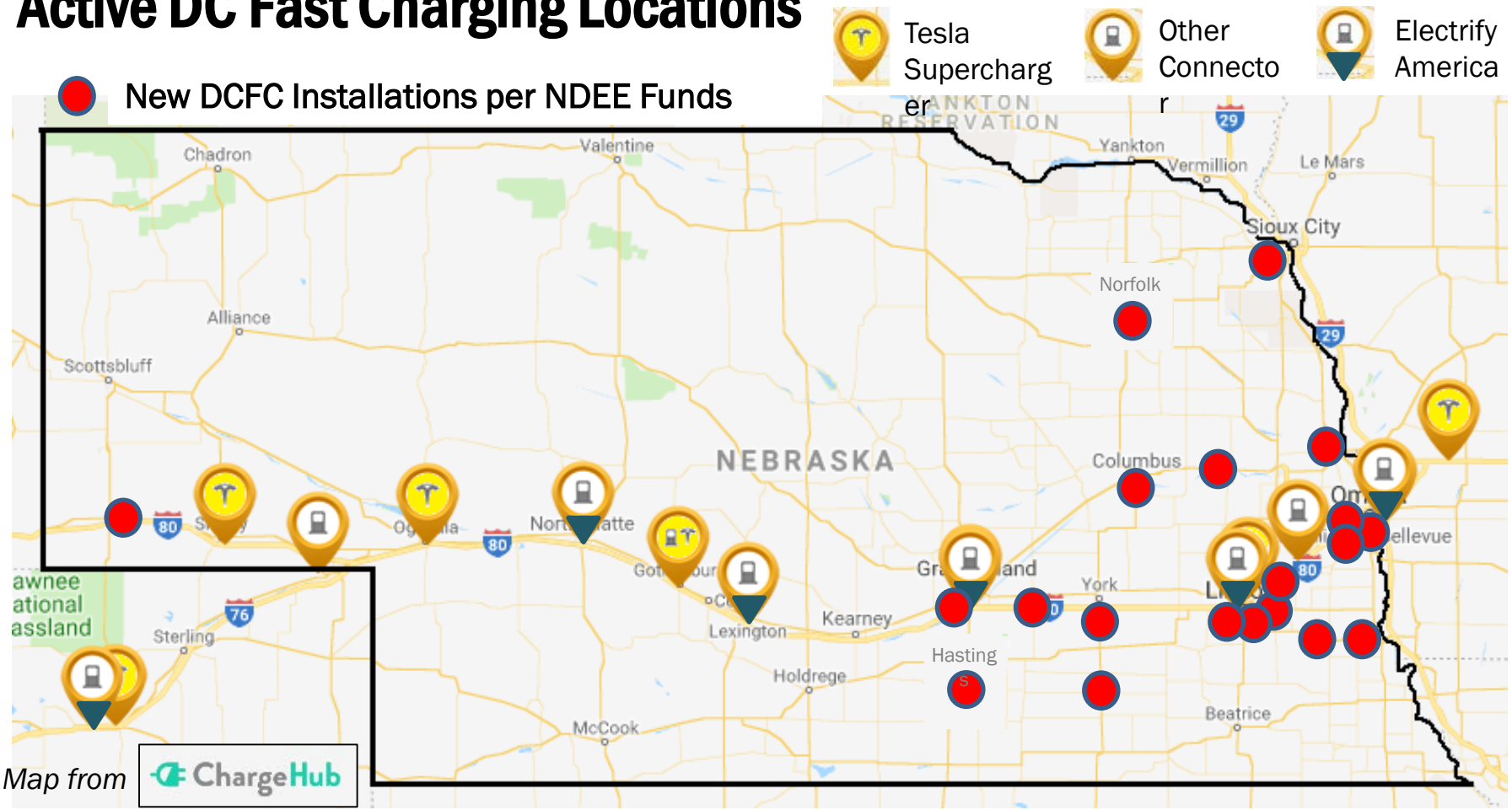


Gray symbols are planned locations

Electrify America DC Fast Charging Network

Serving major Interstate Highway Corridors

Active DC Fast Charging Locations



Charging Station Suggestions: New Construction

- Plan for charging stations at a certain percentage of parking spots
  - Some recommend for 5 – 10% of parking spaces
- A dedicated electrical circuit with sufficient capacity for each charging spot
- Installation of the conduit (wire optional) required to run electricity to the EV charging spots
- Electrical panels labeled EV Ready and positioned near where people will park

Charging Stations Suggestions: Existing Buildings

- Close to available electrical infrastructure
  - Minimize long conduit runs and trenching work
- Possibility of adding future charging stations
- Strong cellular connectivity (may need cellular signal booster)
- Located where they drivers can easily find them
- Adequate lighting for connecting charger to vehicle, and security
- Concrete work, if necessary, for mounting the stations
- Signage requirements

Utility EV Residential Incentives

- Effective today
  - $4,500 EV Purchase with a ChargePoint Charger
  - $500 Residential ChargePoint Charger
  - $200 - $400 Pre-wiring
  - other incentives may be available (i.e. Federal, mfg.)

Incentives – all or partially funded from Nebraska Environmental Trust grants.

Utility EV Commercial Incentives

- New construction – pay for the conduit to be installed for future public or workplace charger.
- Public or workplace charger installation
  - Share in the customer's out of pocket costs 50/50 for the installation of a charger.

Questions?

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